How to address gas market risks in CSEE?

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Policy options to address dominant supplier position and related risks

- Moving away from gas (all CSEE)
  - Energy efficiency
  - Gas-to-RES fuel switch
- Moving away from Russian gas
  - Domestic gas production (non-conventional failures)
  - LNG
  - Physical reverse flows, new infrastructure and new sources

Recent successes

- LNG
  - Lithuania: after implementation of Klaipeda LNG FSRU, immediate 23% price discount from Russia
  - Poland
- Reverse flow and new infrastructures
  - Czech Republic: full physical reverse flow implementation and price convergence (market integration) with Germany
  - Ukraine: major beneficiary of reverse flows from SK, PL and HU; major price discount from Russia in the midst of a war
  - Hungary: increasing its Western and Southern import options, getting TOP relief and price discount

Remaining constraints in transmission reverse flow capacities in the EU

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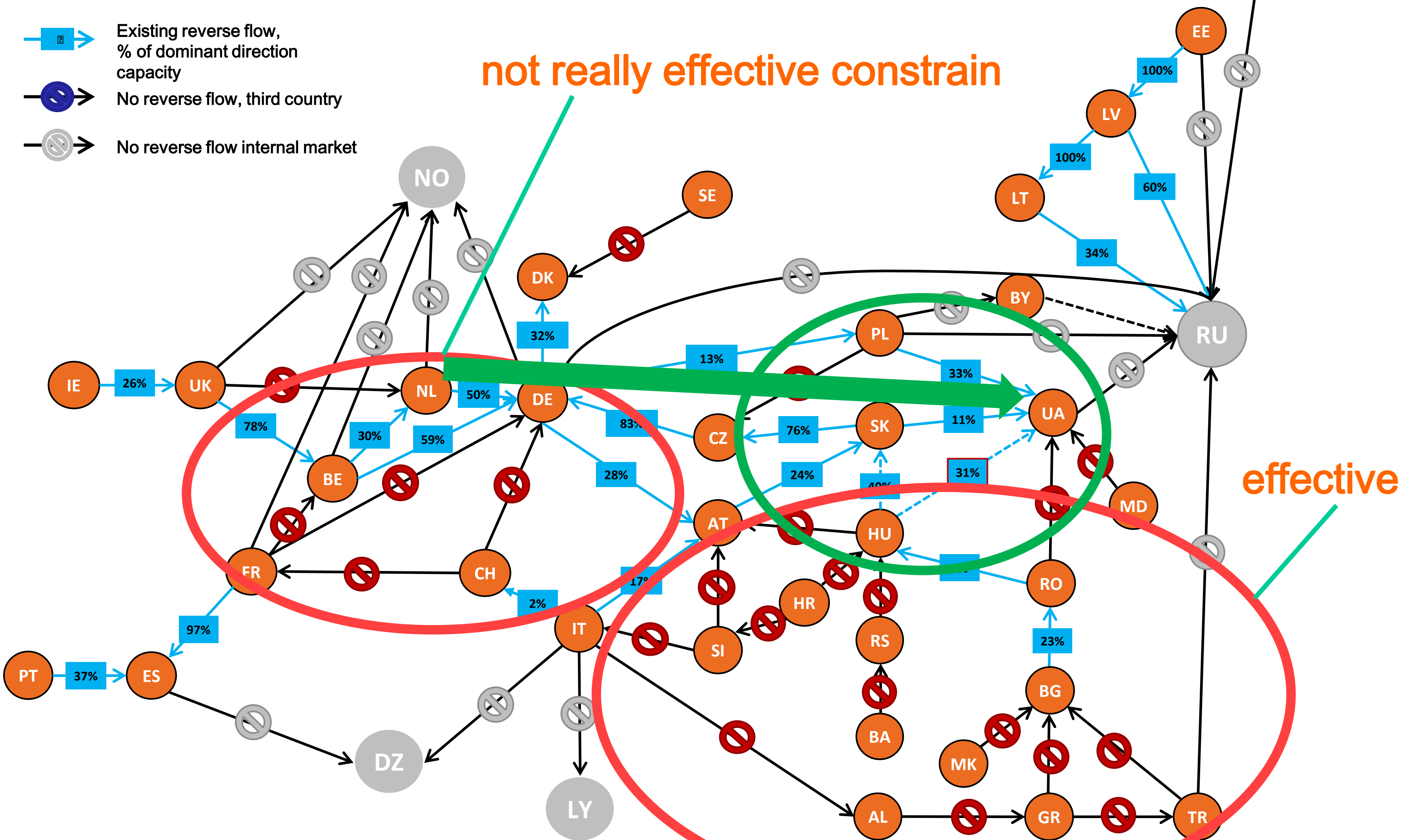

Source: REKK based on The European Natural Gas Network, ENTSO-G (June 2014), FGSZ

2015 reference case – price risk

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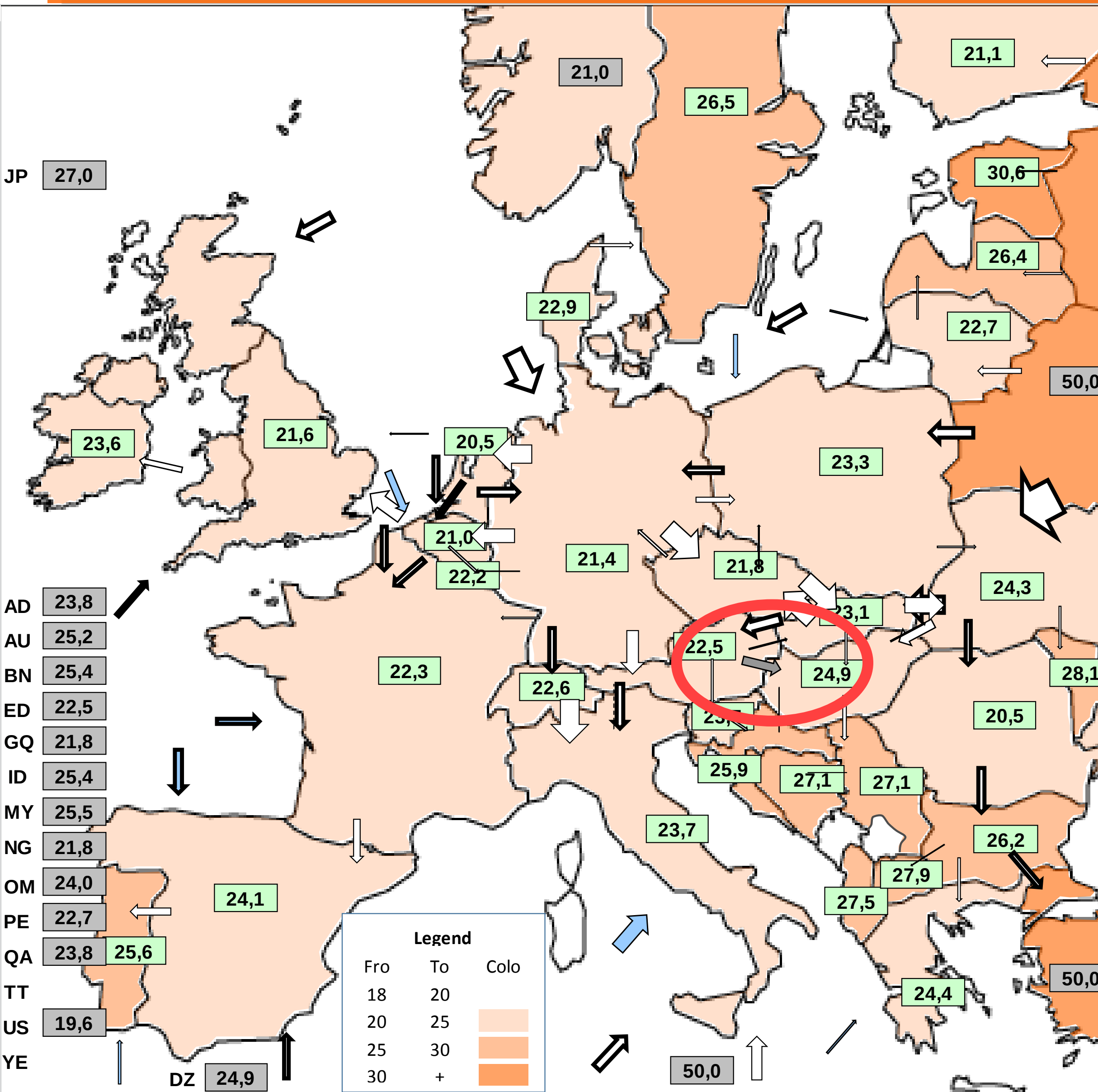

- JP = 27€/MWh
- Modelled congestion within Europe: only AT-HU
- CSEE price: 21-36% over TTF (except for RO)
- Missing reverse flows and no available LNG

2015 reference case – SoS risk

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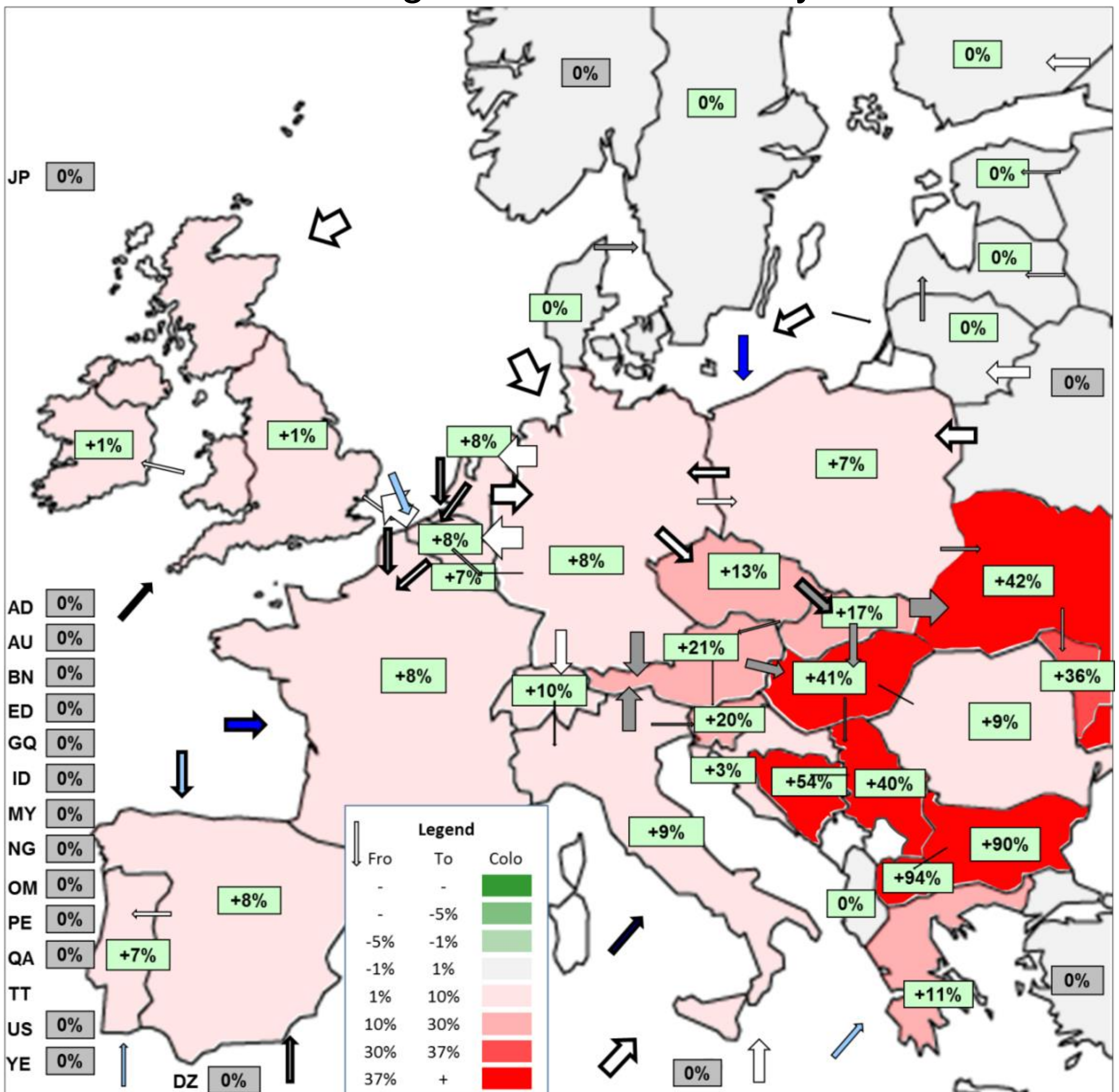
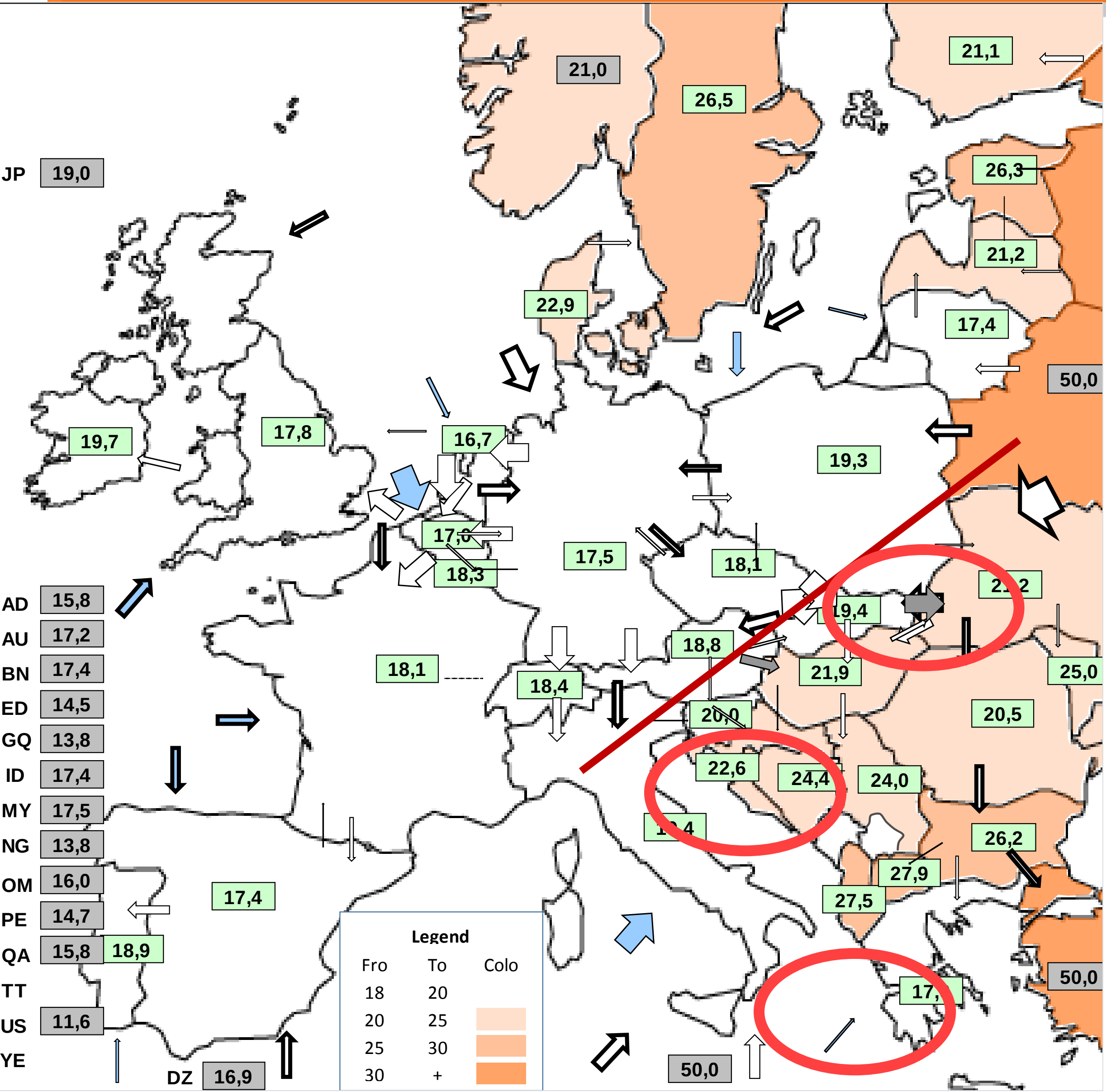
Price change due to a 100% supply cut of all the Russian deliveries through Ukraine in January



- Red colouring of countries indicate a price increase in the January (crisis) prices
- Green boxes indicate % growth of January price compared to January price in the reference
- Congested in SOS in January:
  - AT-HU
  - CZ-SK
  - DE-AT
  - IT-AT
  - SK-UA
  - SK-HU
  - PL-UA
  - RO-HU (on the project list)
  - PL-LNG
  - IT-LNG
  - FR-LNG
- Greek LNG cannot be fully utilized - lack of GR-BG interconnector

Infrastructure constraints set a clear regional split between North- West and South-East



- CSEE price: 22-44% over TTF
- Need for additional LNG in SEE or connecting LNG-GR to SEE is needed

Building all PCIs would bring benefits – but is it affordable?

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Estimated impact of implementing natural gas PCI projects on gas wholesale prices in CSEE

Market	Reference	Short-term	Mid-term	Price change due to short-term PCI projects (€/MWh)	Price change due to mid-term PCI projects (€/MWh)	Price change due to short-term PCI projects (%)	Price change due to mid-term PCI projects (%)
AT	21.9	21.9	21.7	-0.03	-0.22	-0.1%	-1.0%
BA	27.0	26.9	23.0	-0.13	-4.07	-0.5%	-15.1%
BG	26.2	25.4	20.8	-0.76	-5.35	-2.9%	-20.5%
CZ	21.3	21.2	21.1	-0.04	-0.22	-0.2%	-1.0%
DE	20.9	20.9	20.7	-0.07	-0.24	-0.3%	-1.1%
HR	25.5	25.3	21.6	-0.15	-3.81	-0.6%	-15.0%
HU	25.7	24.0	23.7	-1.71	-2.03	-6.6%	-7.9%
MV	27.7	26.1	25.9	-1.62	-1.79	-5.8%	-6.5%
RO	20.6	24.0	23.9	3.43	3.25	16.6%	15.8%
SB	27.7	26.3	22.5	-1.44	-5.20	-5.2%	-18.7%
SI	23.0	23.0	22.8	-0.04	-0.26	-0.2%	-1.1%
SK	22.6	22.6	22.4	-0.04	-0.22	-0.2%	-1.0%
UA	23.9	23.7	23.5	-0.22	-0.40	-0.9%	-1.7%
DR average	**24.2**	**24.0**	**22.6**	**-0.22**	**-1.58**	**-0.9%**	**-6.5%**
Whole Europe	**23.7**	**23.6**	**22.1**	**-0.10**	**-1.60**	**-0.4%**	**-6.8%**

REKK modelling, 2015

CESEC: define the minimum set of PCIs that brings maximum benefit at least cost

Analysed scenarios in CESEC

	LNG in Croatia	RO offshore production	Azeri gas from Turkey	Greek LNG expansion
Cluster A. (HR_LNG+)	X			
Cluster B. (RO-HU-AT)		X		
Cluster C. (TANAP-TAP-IGB)			X	X
Cluster C2. (Greek LNG+)				X
Top down (all projects)	X	X	X	X
Bottom up V1 (projects most necessary to connect markets)	X	X	X	
Bottom up V2 (only LNG)	X			X
Bottom up V3 only pipeline		X	X	

Alternative 1: Greek LNG expanded

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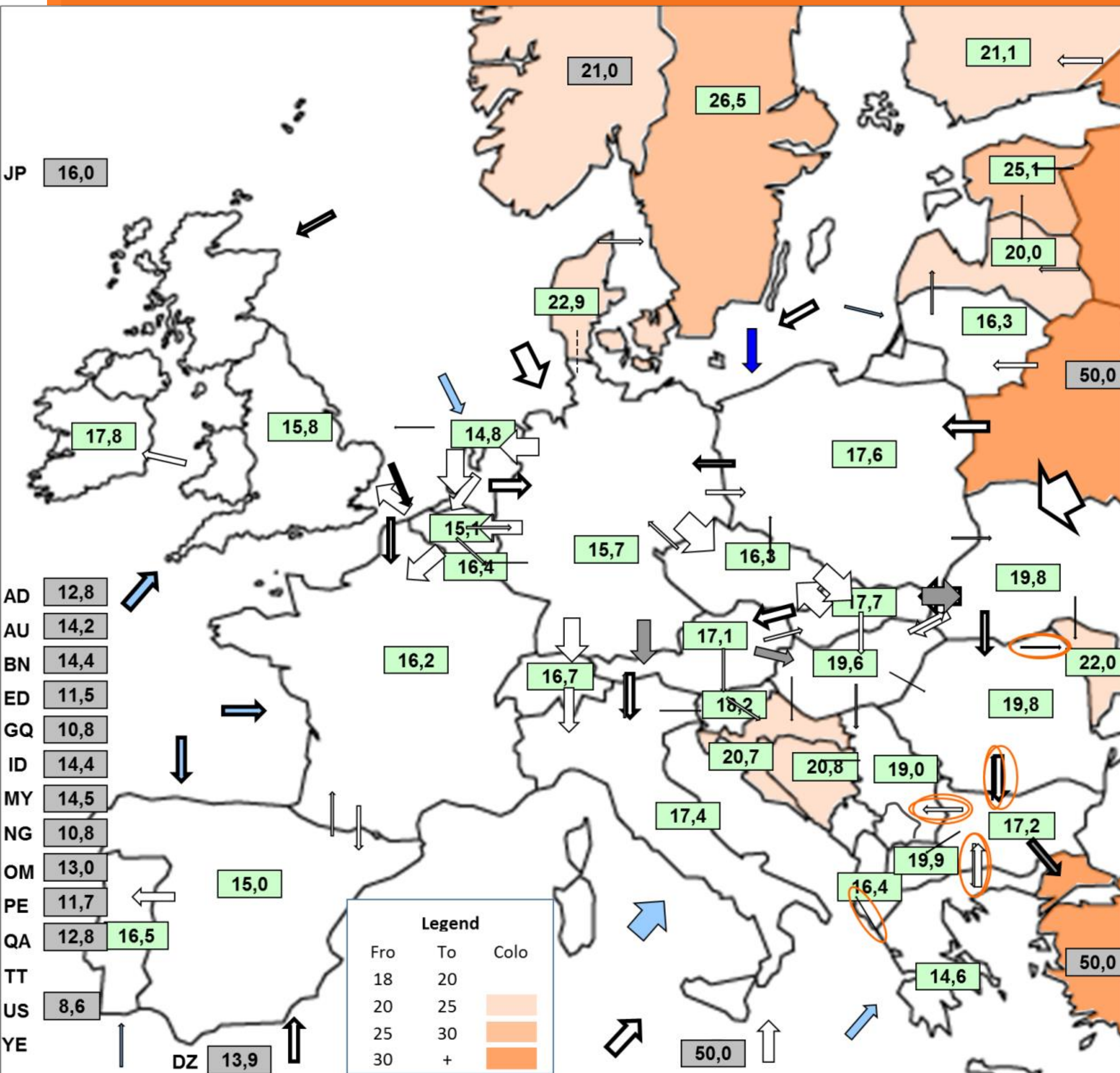
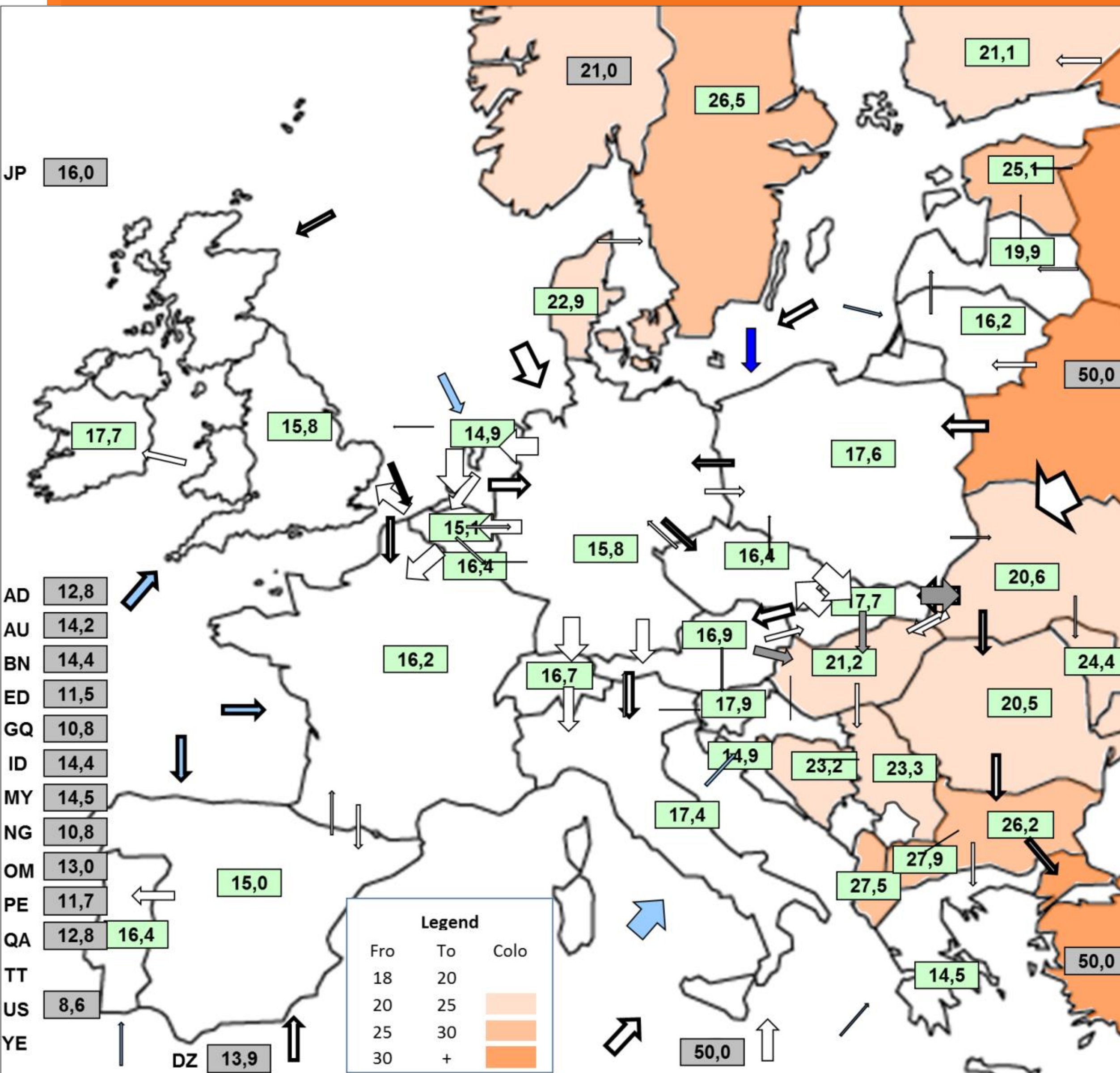


- TTF: 14.8
- New infrastructure:
  - GR-BG
  - BG-SB
  - BG-RO
  - RO-MV
  - GR-AL
- Price decrease in East Balkan
- Germany – Greece corridor completed

Alternative 2: HR – LNG implemented



- Not much help without infrastructure upgrade

HR- LNG + infrastructure upgrade

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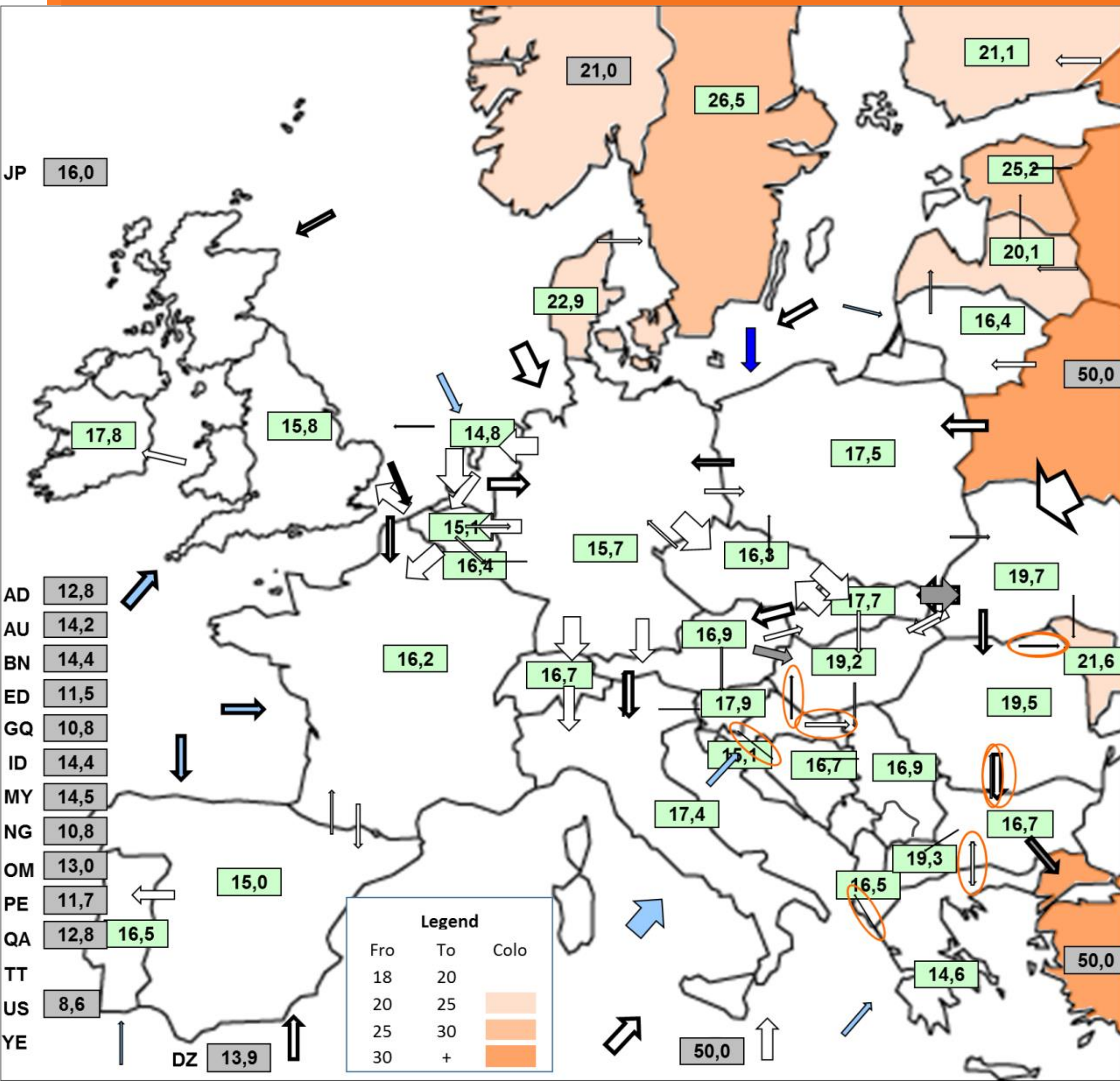
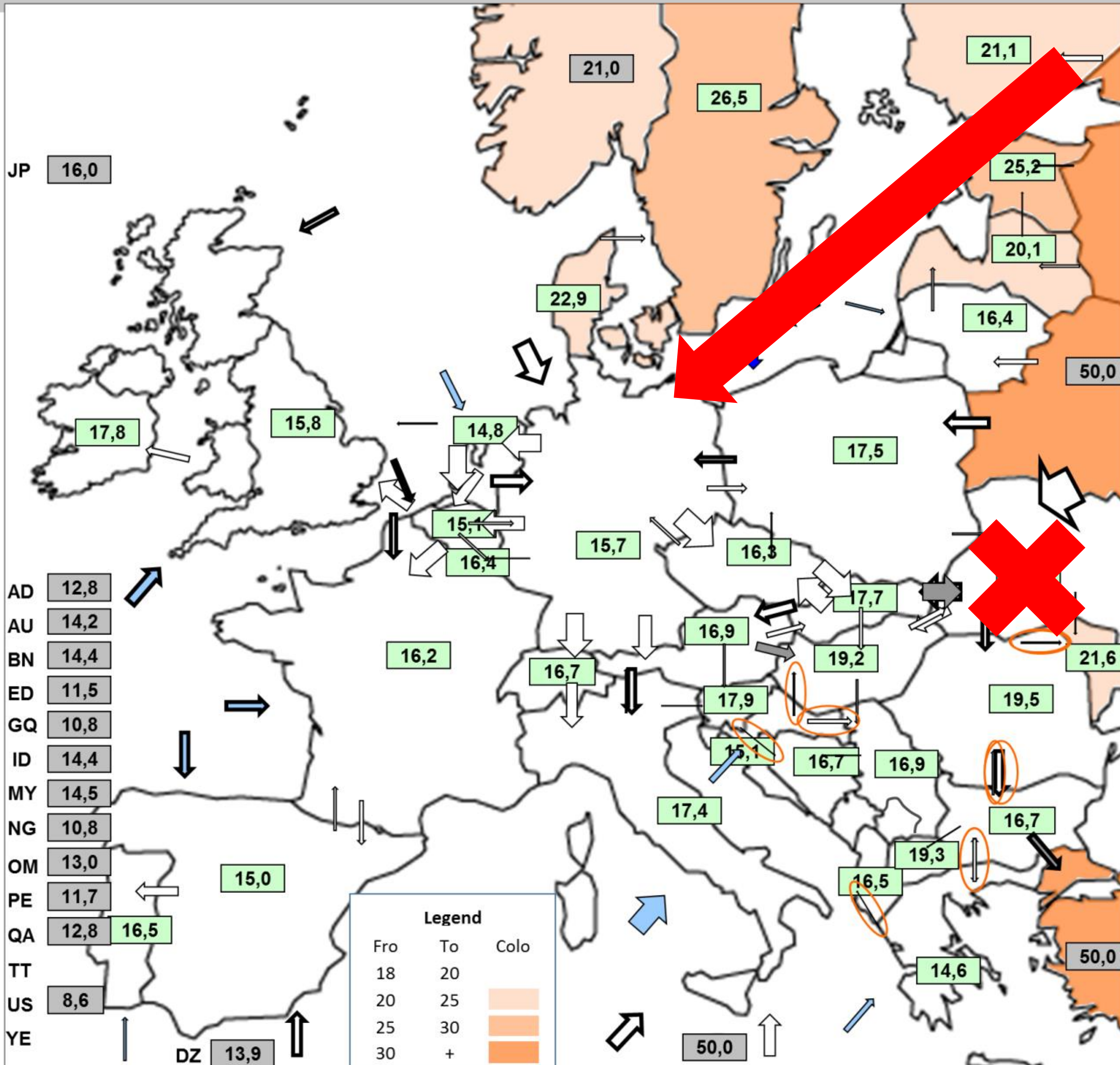


- Problem solved without new major pipeline!
- New infrastructure:
  - GR-BG
  - BG-RO
  - RO-MV
  - GR-AL
  - HR-HU
  - HR-BA
  - HR-SB (instead of BG-SB)

Game 2.0: North Stream 2



Conclusions

- TAP and new LNG are key for diversification in the region
- Small is beautiful: a subset of regional PCIs can complete market integration at least cost
- There is a robust business case for new LNG entry to CSEE, especially in case of North Stream 2
- In case of CSEE remaining captured, moving away from gas is the remaining option

EGMM references

- Analysis of the CSEE gas storage market; the impact of system use charges on the demand for gas storage capacity (E.ON, 2012) and (Ministry of Foreign Affairs of Hungary, 2013)
- CBA of PECI projects for the Energy Community (2013)
- Latest significant upgrade supported by FGSZ (Hungarian TSO)(2013)
- The impact of gas infrastructure corridors on the regional gas market (MoFA RoBoGo, March 2014), FGSZ South Stream (April 2014)
- Supply Security analyses related to the Ukrainian crisis (2014, Atlantic Council, EFET, IDDRI)
- Towards 2030 – Dialogue (Horizon 2020 project, European Commission)
- CBA of PCI projects for the Hungarian Energy and Public Utility Regulatory Authority (2014-2015)
- Measures To Increase The Flexibility And Resilience Of The European Natural Gas Market (IEA, 2014)
- Infrastructure benefits modelling for the High-level Group for Central Eastern and South-Eastern Europe Gas Connectivity (CESEC) (DG Energy, European Commission, 2015)
- Gas market integration and gas supply security impacts of the Energy Union proposal in the Danube Region (Danube Region Strategy of the EU, 2015)

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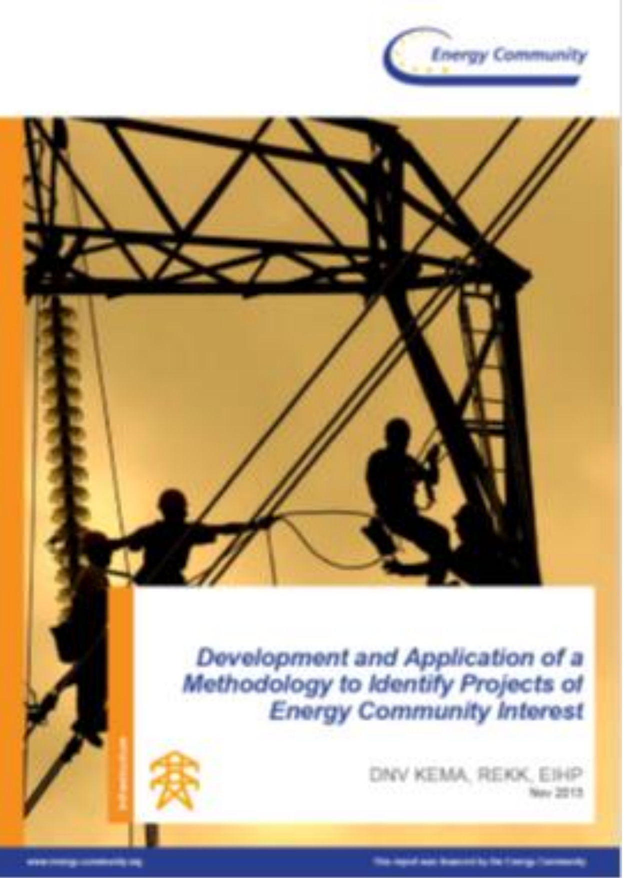
THANK YOU FOR YOUR ATTENTION!



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